"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KU[illegible], [illegible]

Structure and asymptotic values of a certain class of decision quantum systems. Rozpr elektrotech 10 no.3:427-452 '64

1. Department of Radiolocation, Technical University, Warsaw.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, J.L.

Class of adaptive decision systems, optimal in the Bayes' sense. Archiw elektrotech 13 no.3:525-540 '64.

1. Department of Radiolocation of the Technical University, Warsaw.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, J.L.

Review of recent development trends in techniques and theory of signal reception within distrubances. Przem inst telekom prace 14 no.45:1-23 '64.

1. Department of Radiolocation, Technical University, Warsaw.

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L 2857-66 EPF(n)-2/EWP(1) IJP(c) WW/BC

ACCESSION NR: AP5023972 PO/0031/65/010/002/0103/0110

AUTHOR: Kulikowski, J. L. (Kulikovski, Yu. L.) 44

TITLE: One problem of controlling a plant with random frequency-response functions 29 B

SOURCE: Archiwum automatyki i telemechaniki, v. 10, no. 2, 1965, 103-110

TOPIC TAGS: automatic control theory, linear control system 9,44

ABSTRACT: The problem of controlling a linear plant described by the functional equation

$$y_\mu(t) = \sum_{\nu=1}^{n} \int_{-\infty}^{t} k_{\mu\nu}(t, \tau) \cdot u_\nu(\tau) d\tau, \quad \mu = 1, 2, \ldots, n; \quad \nu = 1, 2, \ldots, n, \tag{1}$$

where $y_\mu(t)$ and $u_\nu(t)$ are output and input signals, respectively, and $k_{\mu\nu}(t, \tau)$ is a frequency-response function which is a random function of time, is analyzed. This problem consists in determining those control signals $u_\nu(t)$ ($\nu = 1, 2, \ldots, n$)

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which maximize the performance functional

$$r = \sum_{\alpha \neq \nu=1}^{m} r_{\alpha\nu} = \sum_{\alpha \neq \nu=1}^{m} \frac{1}{T} \int_{t-T}^{t} y_\alpha(\tau) y_\nu(\tau)\, d\tau, \qquad (2)$$

where r is the sum of correlation coefficients between the output values and T is the length of time during which the output signal was under observation. The problem is solved for two particular cases: 1) when the norm of the control signal is bounded; 2) when the norm of the output signal is bounded. This variational problem was solved by applying the method of Lagrange multipliers. Systems of linear equations are derived and conditions are established under which these systems have nontrivial solutions. The problem of realizing the algorithm for determining the control signals on high-speed computers is considered. Orig. art. has: 23 formulas. [LK]

ASSOCIATION: none

SUBMITTED: 00	ENCL: 00	SUB CODE: IE,MA
NO REF SOV: 000	OTHER: 000	ATD PRESS: 4110

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KULIKOWSKI, Juliusz Lech, dr inz.; SEIDLER, J.; REUTT, Antoni, mgr inz.; FINDEISEN, Wladyslaw

Review of technical literature. Przegl elektrotechn 41 no.1: 29-34 Ja '65.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

ACC NR: AP7001171 SOURCE CODE: PO/0031/66/011/004/0359/0372

AUTHOR: Kulikowski, Juliusz Lech -- Kulikovski, Yu. L.

ORG: Department of Radar, Warsaw Polytechnic Institute (Katedra Radiolokacji, Politechnika Warszawska)

TITLE: Problems of probability optimization of automatic control system structure

SOURCE: Archiwum automatyki i telemechaniki, v. 11, no. 4, 1966, 359-372

TOPIC TAGS: automatic control system, ~~automation~~, ~~telemechanics~~, probability, system optimization, probability optimization, ~~automatic optimization~~

ABSTRACT: The method of random generation of possible variants of (automatic control) system structures and the selection of the optimal system were studied. It is known that this method is sometimes used to solve problems of large-scale system optimization, especially in complex cases or when a digital computer is used to perform automatic optimization procedures. The problem of choosing the optimum number of optimalizing trials was investigated statistically in order to obtain a maximum gain ("maximum gain" was defined as the difference between the

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gain due to system optimization and trial costs). Two cases are considered: the probability density function for the gain 1° is known a priori 2° is unknown. In each case two types of results were obtained: drawn out results which can be stored and used later, or results which cannot be stored and must be reobtained by random drawing. Formulae are also given which make a decision possible as to whether it is feasible to continue trials or to stop them and accept the results as optimal. Orig. art. has: 3 figures and 42 formulas. [Based on author's abstract] [DR]

SUB CODE: 12, 13, 09, 14/SUBM DATE: 31Dec65/ SOV REF: 001/ OTH REF: 002/

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, R.

Wstep do syntezy liniowych ukladow elektrycznych. (Wyd. 1.) Warszawa, Panstwowe Wydawn. Naukowe, 1947. 273 p. (Polska Akademia Nauk. Monografie zagadnien elektrotechniki teoretycznej) (Introduction to the synthesis of linear electric systems. 1st ed. illus, bibl., footnotes, graphs, index)

SO: Monthly Index of East European Accession (EEAI) LC Vol. 7, No. 5, 1958

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

621.374.3 : 621.372.5

2310. ANALYTICAL DESIGN OF LINEAR PULSE CIRCUITS.
R.Kulikowski.
Arch. elektrotech. (Warsaw), Vol 3, No 2, 157-80 (19).
In Polish with summary (3 pp) in English

Two types of problem are considered (1) a voltage applied to the input of a linear quadripole should produce an output voltage U(t) such that the function P(t) = U(t) - kE(t) would deviate from zero as little as possible over an interval $t_2 - t_1$; (2) the desired output voltage $U_0(t)$ should be such that the difference P(t) = U(t) - U_0(t), where U(t) is the actual output function, would have a minimum deviation from zero. The problem is solved by specifying the maximum permissible deviation and expressing the function P(t) as a Chebyshev polynomial. The method is applied to the evaluation of the parameters in a time-base generator, a pulse amplifier and a two-terminal pulse-forming network. R.S.Sidorowicz

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

621.374.3 : 621.372.5

2311. SYNTHESIS OF LINEAR PULSE SYSTEMS.

R.Kulikowski.

Arch. elektrotech. (Warsaw), Vol 3, No 3, 425-45 (1954)

In Polish with summary (2 pp.) in English

The design of the linear pulse-forming system (consisting of an L-shaped quadripole with RC elements) is based on the given (rational) transfer function determined by the method of "the optimum approximation" as previously developed by the author (see preceding abstract). The synthesis of a forming quadripole of a linear time base with a definite accuracy (expressed by "the coefficient of non-linearity" related to transfer function) is discussed in detail, and the forming circuit is realised as a cascade coupling of the L-shaped circuits.

Numerical examples are given and it is found that the increase of the time base amplitude up to 3 times (as compared with the usual circuit) is achieved for the same [illegible]

R.S.S.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

[illegible], R.

Plebanski, J. Optimum characteristics of linear pulse systems. In English. p. 23.
BULLETIN, Varsovie, Vol. 3, no. 1, 1955.

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, no. 10, Oct. 1955, Uncl.

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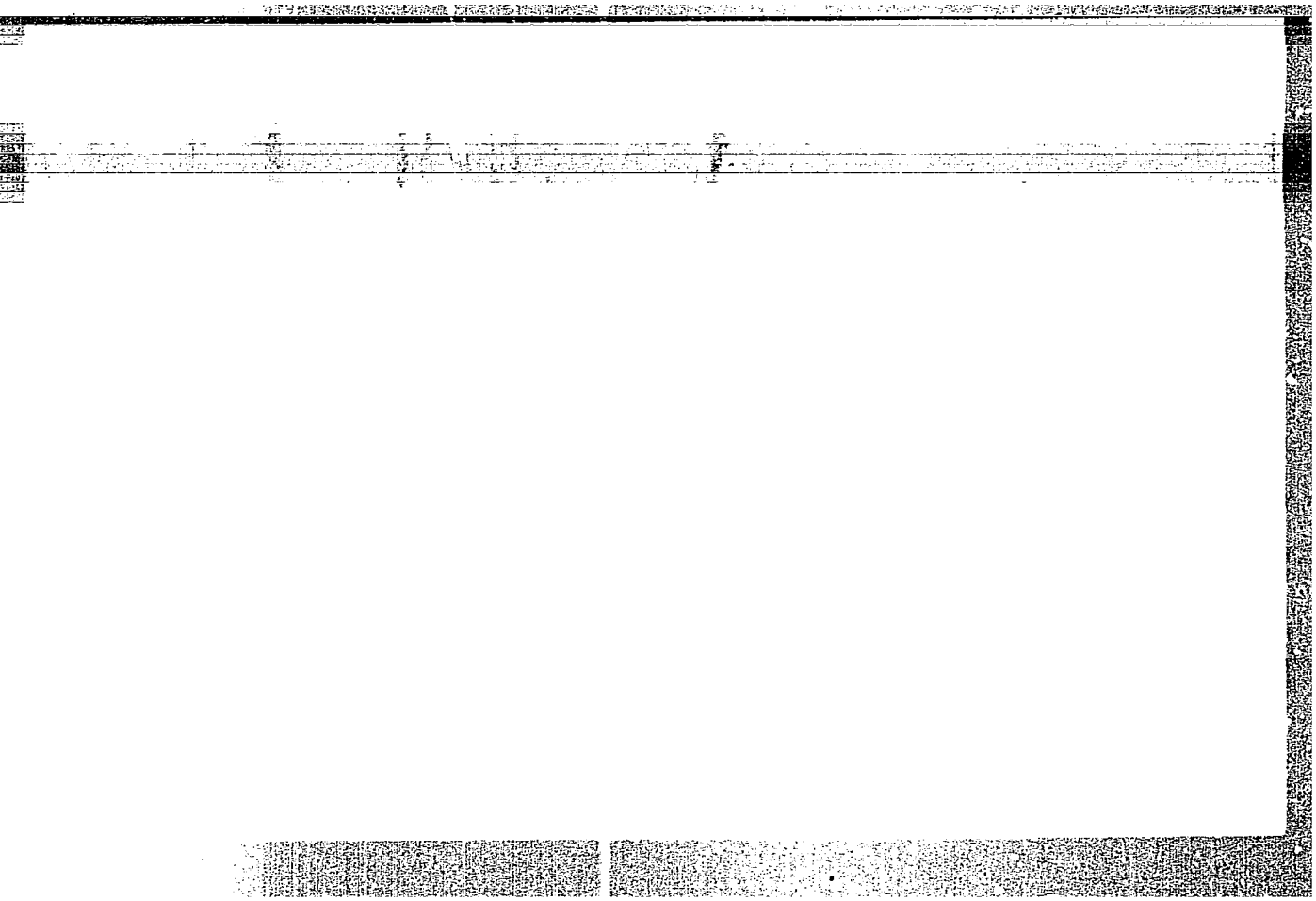

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621.374.3 : 621.372.5

2312. DETERMINATION OF THE OPTIMUM LINEAR NET-WORK PARAMETERS BASED ON THE TIME CHARACTERISTICS. R Kulikowski

Arch. elektrotech. (Warsaw), Vol 4 [illegible] 2, 323-46 (1955)

In Polish with summary (1 p.) in E[illegible]

The optimum parameters are [illegible] used by minimizing the value of a distance (based on the [illegible]ated to deform ation criterion) between the input and [illegible] functions con sidered in an appropriate metric function space. The case of C-space of continuous functions was treated in an [illegible] paper (see preceding abstracts) so only the example of the design of the impulsive amplifier with a current feedback coupling is considered. In the L_2 space of integrable functions the minimum is found with the help of the Laplace transform, and the application to the design of an n-stage amplifier is given. In the L^2-space of functions whose square is integrable the minimum is found from the convolution property of Laplace transforms. The detailed discussion is given of a two-stage pulse amplifier (unit step input), amplifiers with a correction (negative exponential input), and the optimum coupling coefficient in a resonance amplifier (delayed unit step input). Wiener's method of optimum filtering (for station-ary signals with given power spectra) is also quoted. Finally, an automatic programme regulation [illegible] metric measuring circuit is discussed.

R Syski

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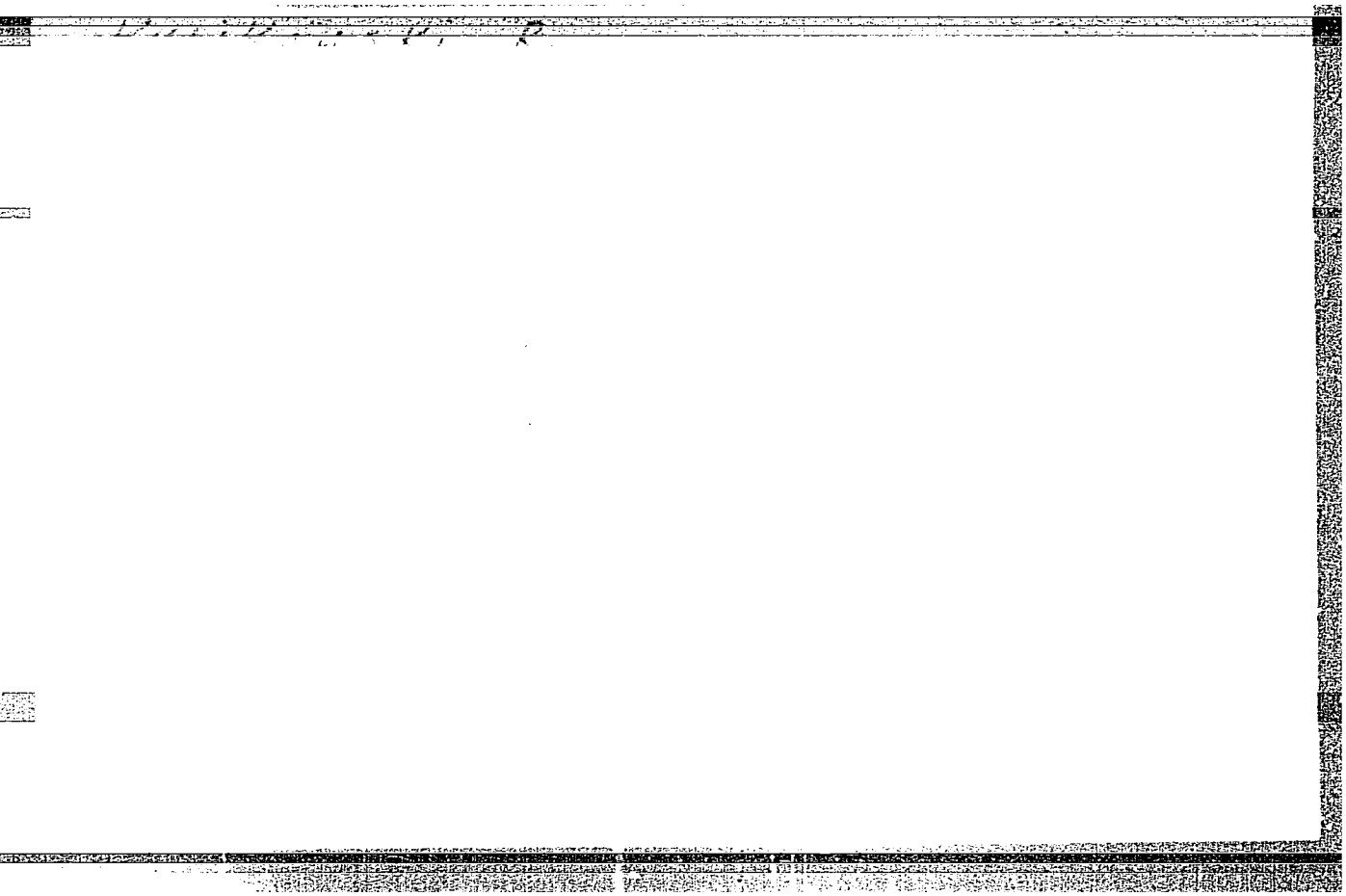

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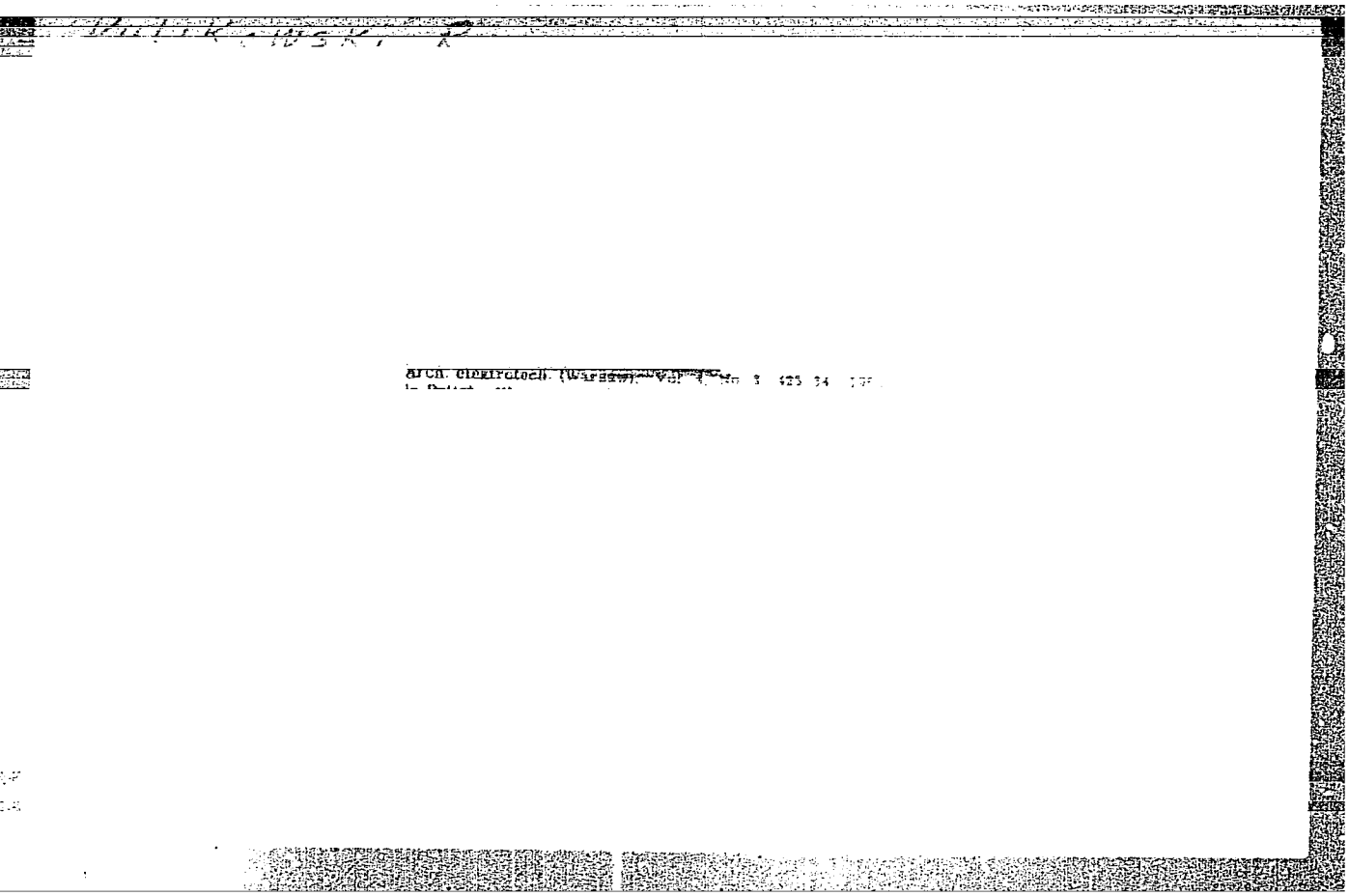

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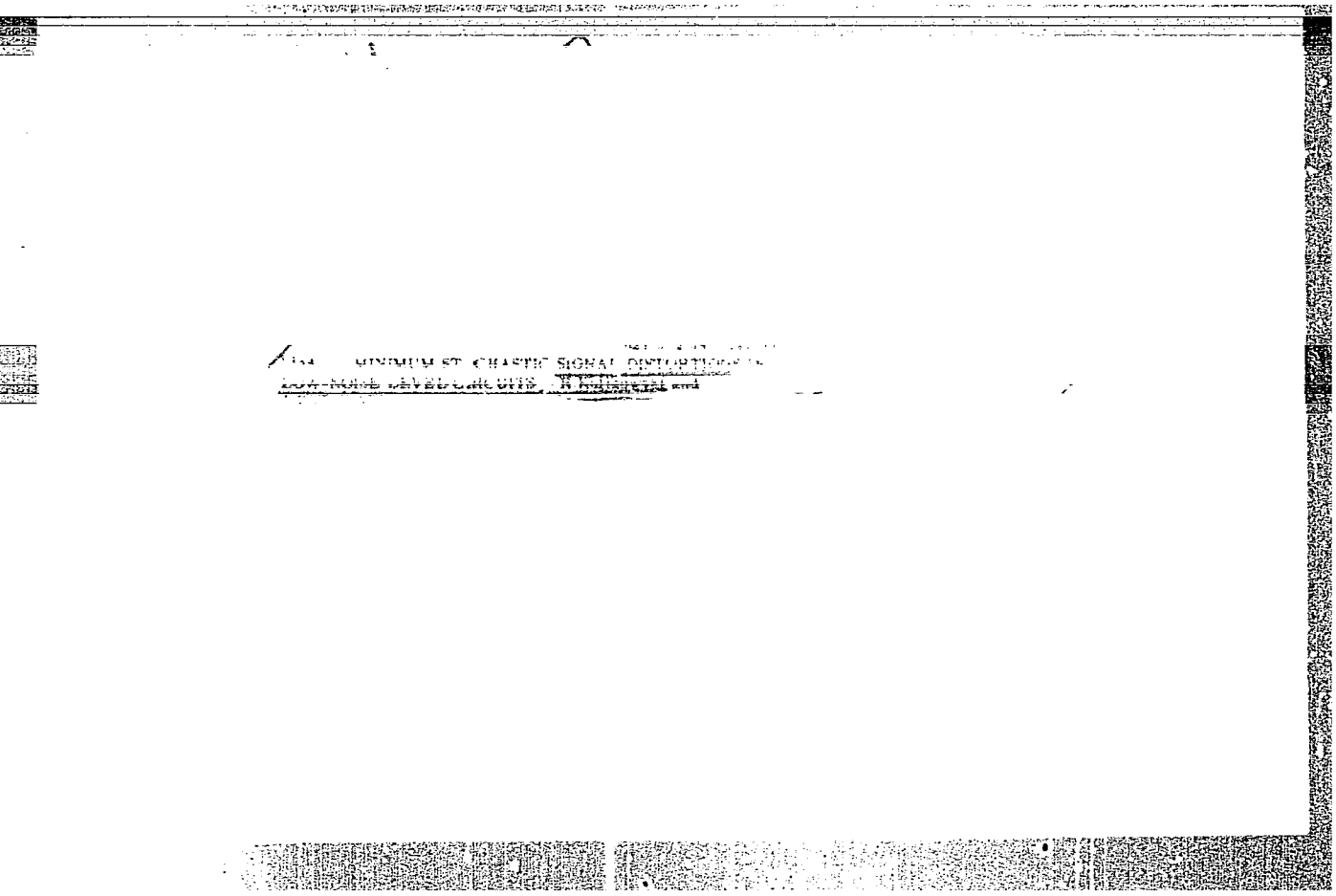

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

621.372.5

4293. Optimum characteristics of linear pulse systems. R. KULIKOWSKI AND J. PLEBAŃSKI. *Bull. Acad. Polon. Sci. Cl. 4*, 3, No. 1, 23–8 (1955)

The determination of the response function (and hence the frequency characteristic) of a linear network corresponding to pulse excitation with minimum distortion, leads to a variational problem of the isoperimetric type. Uniqueness of solution is considered and the results are applied to various types of linear filter

G. D. SIMS

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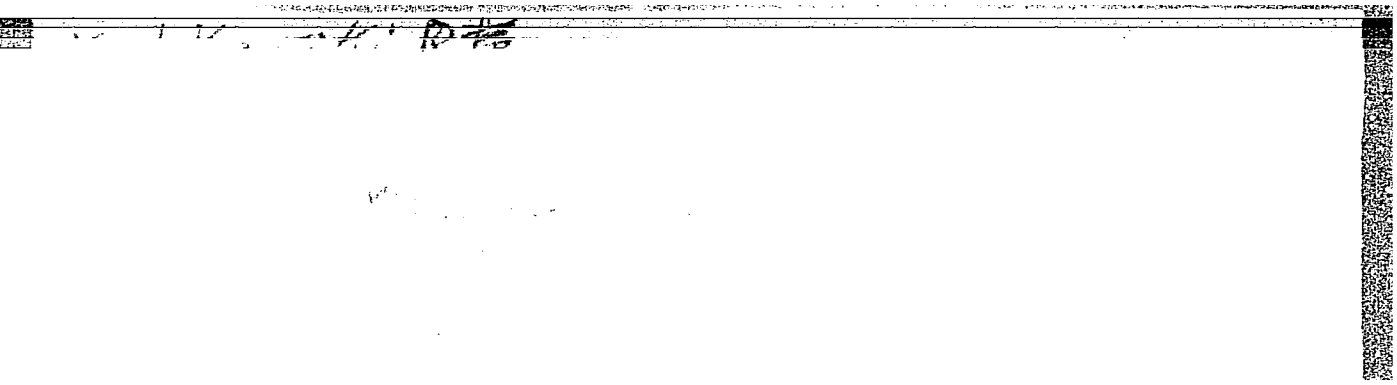

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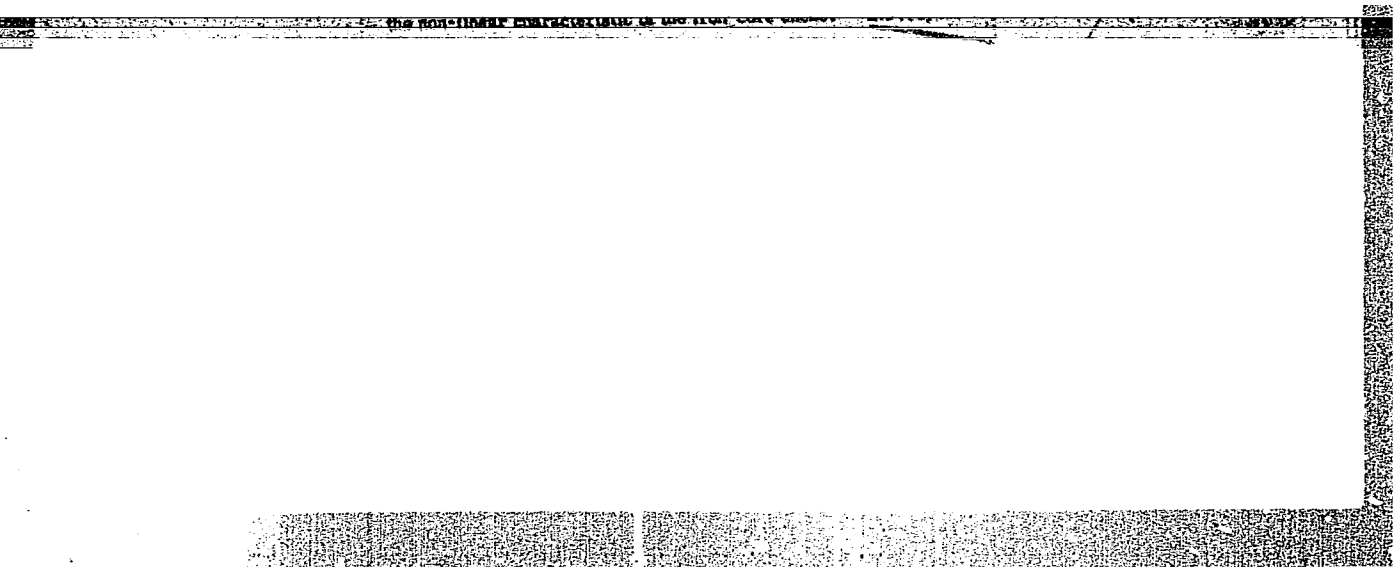

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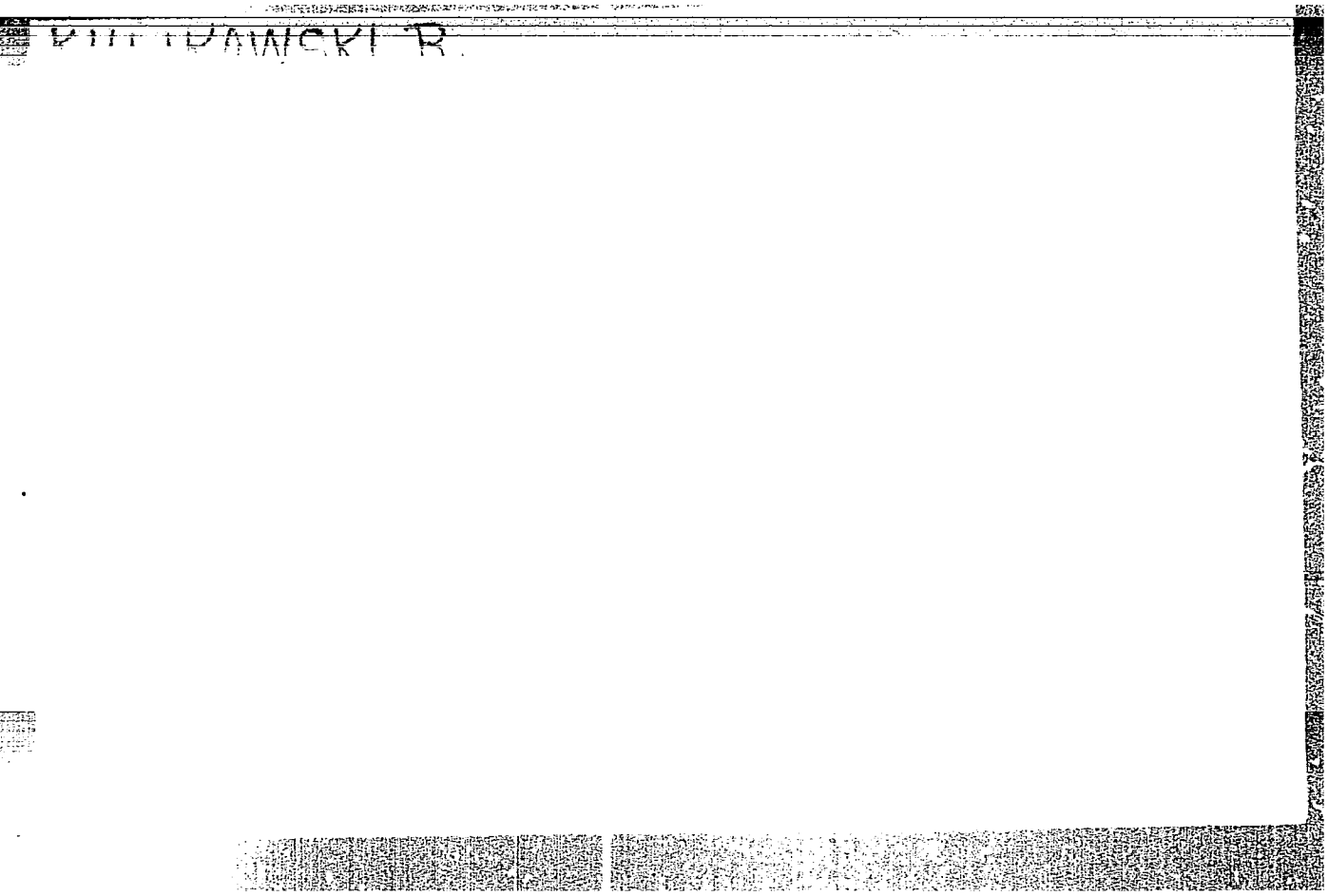

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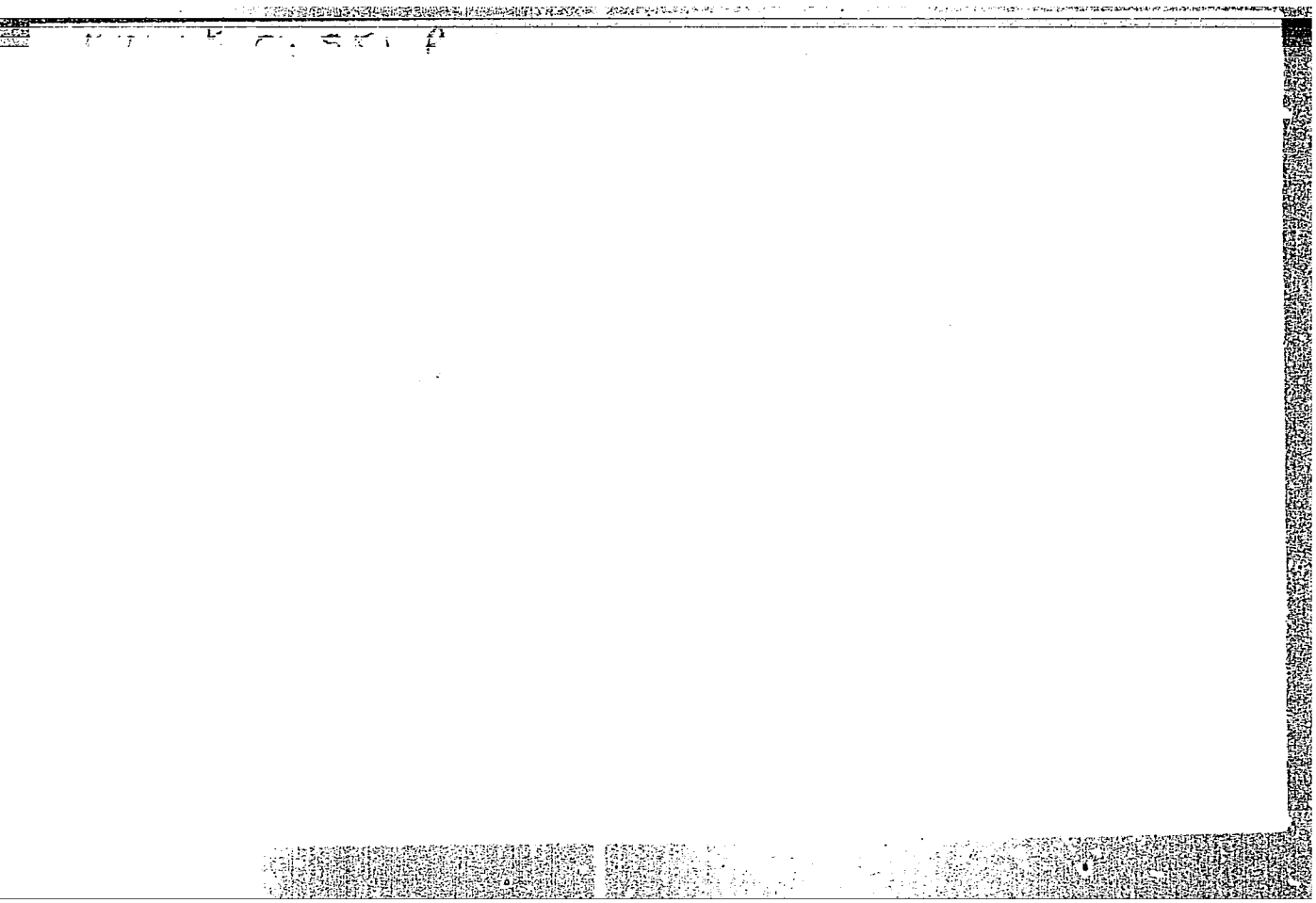

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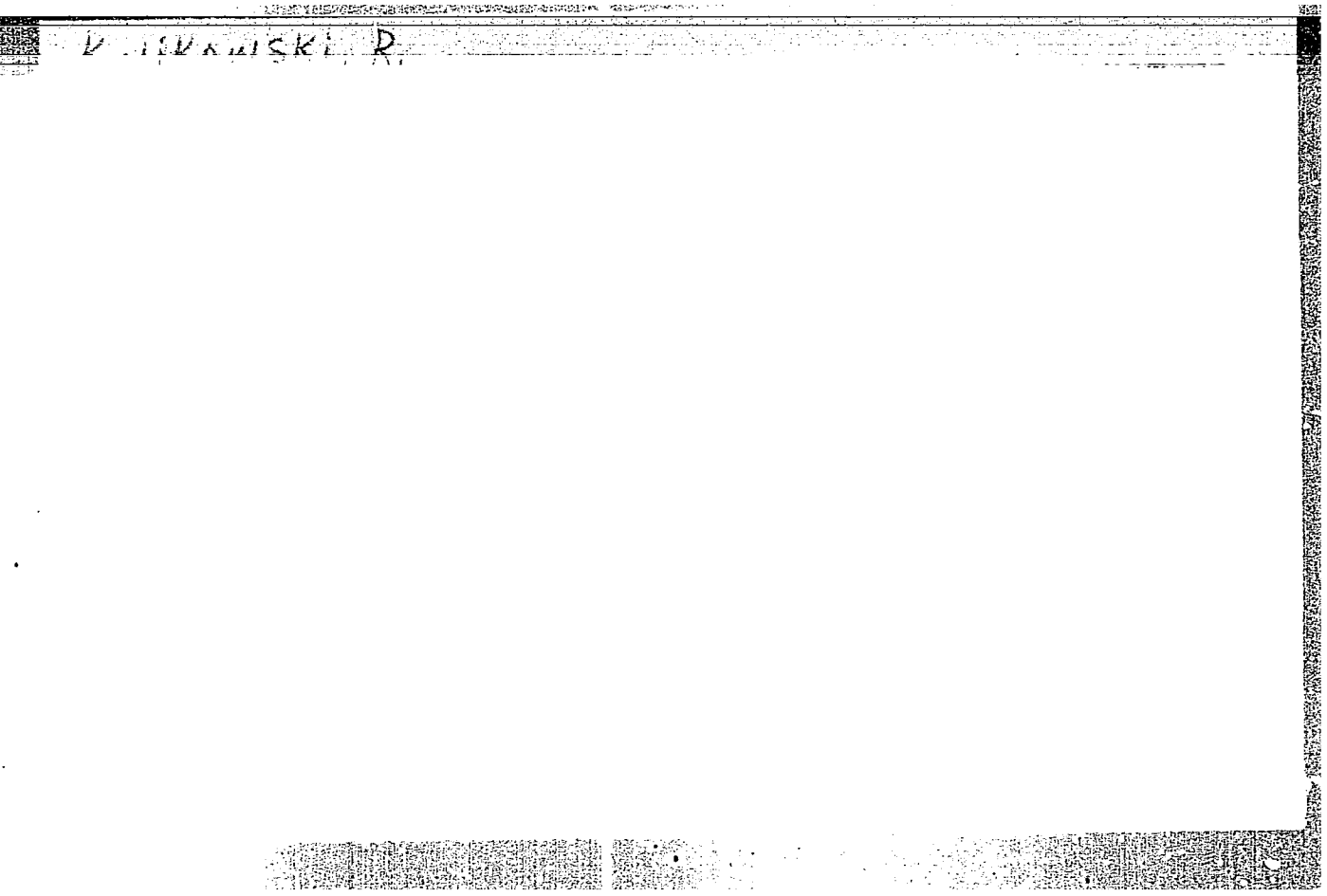

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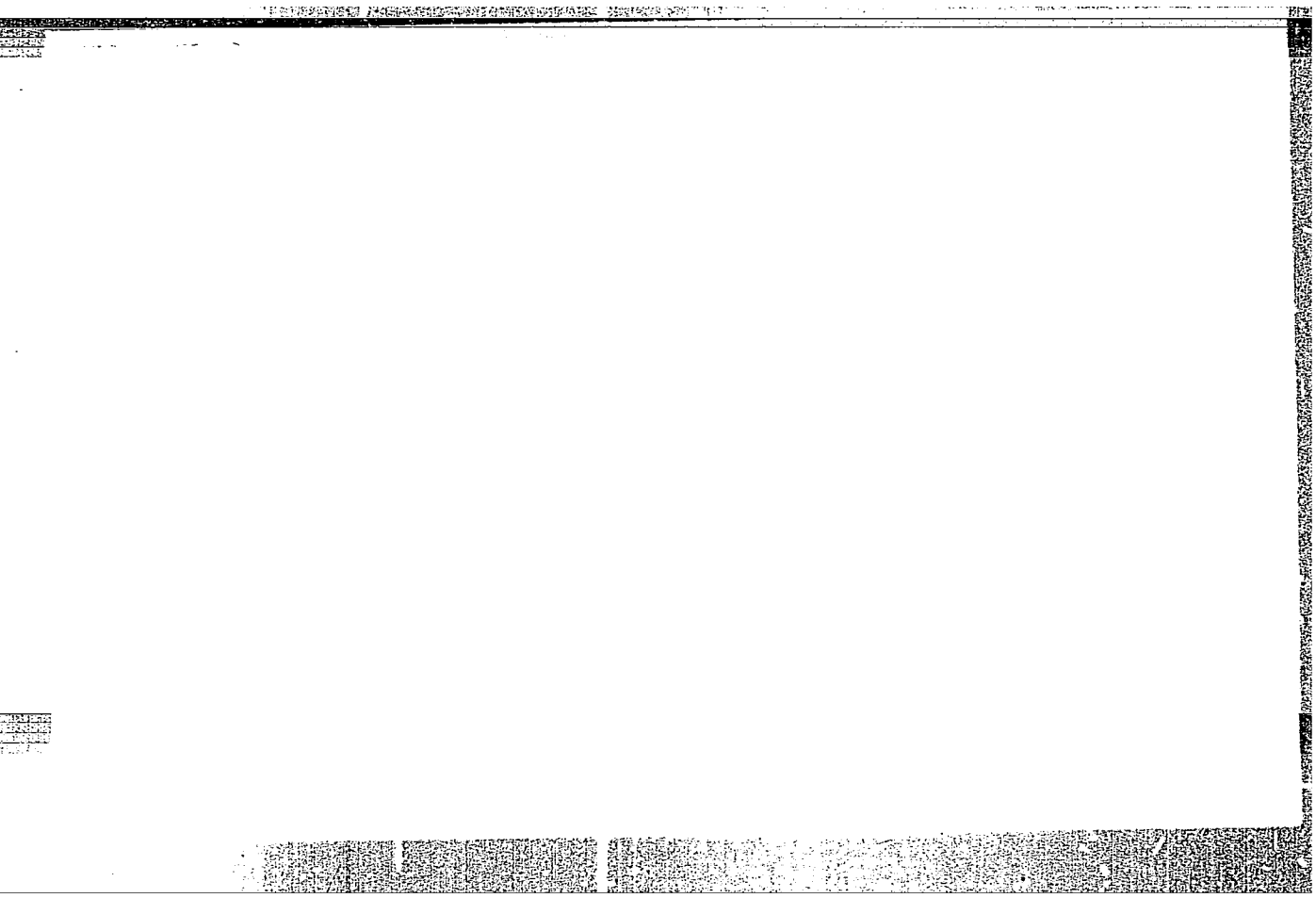

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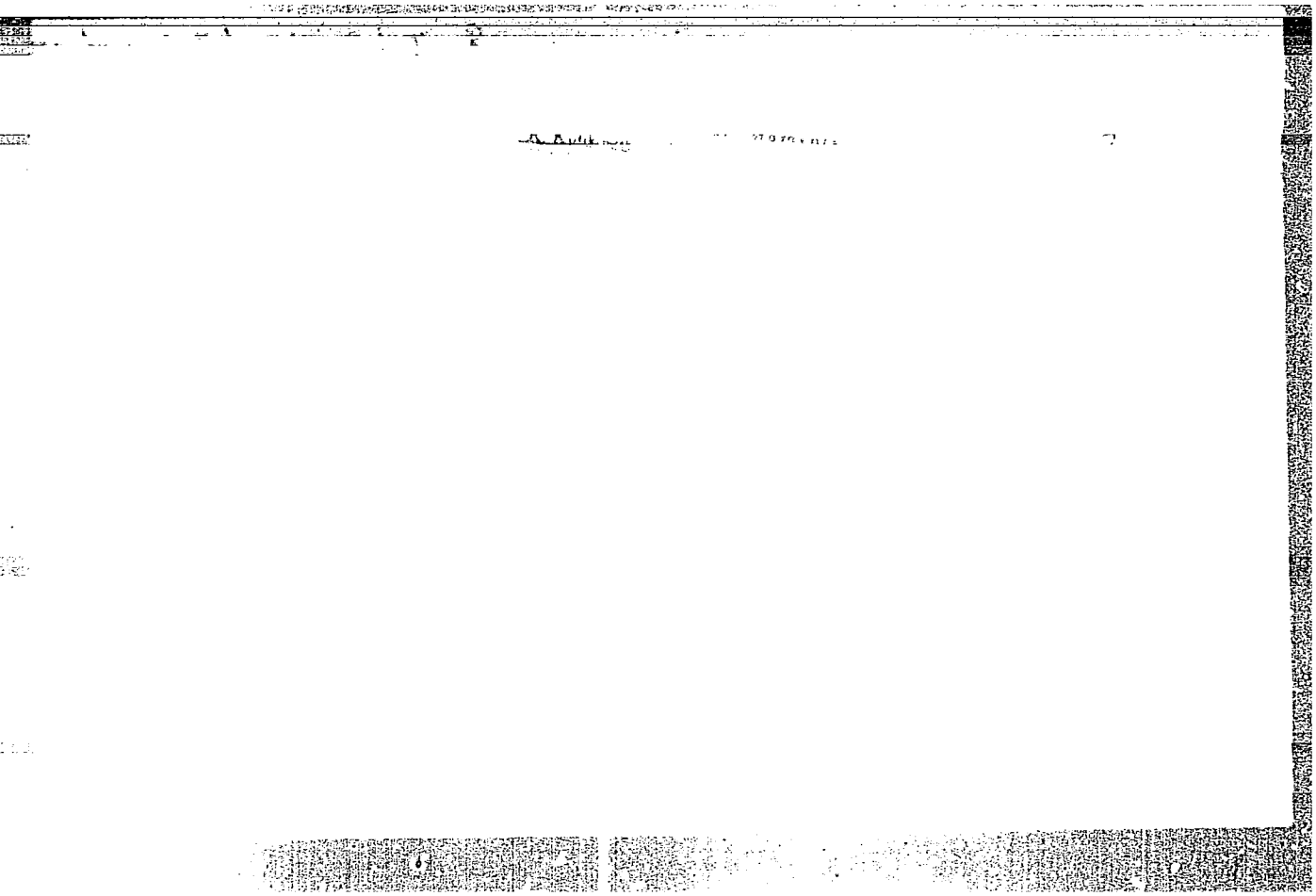

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KULIKOWSKI, R.;RYBARSKI, A.

KULIKOWSKI, R.;RYBARSKI, A. Criterion for wquare root distortion at a limited noise power. p. 379.

Vol. 5, no. 2, 1956
ARCHIWUM ELECKTROTECHNIKI
TECHNOLOGY
Warszawa, Poland

So: East European Accession, vol. 6, no. 2, Feb. 1957

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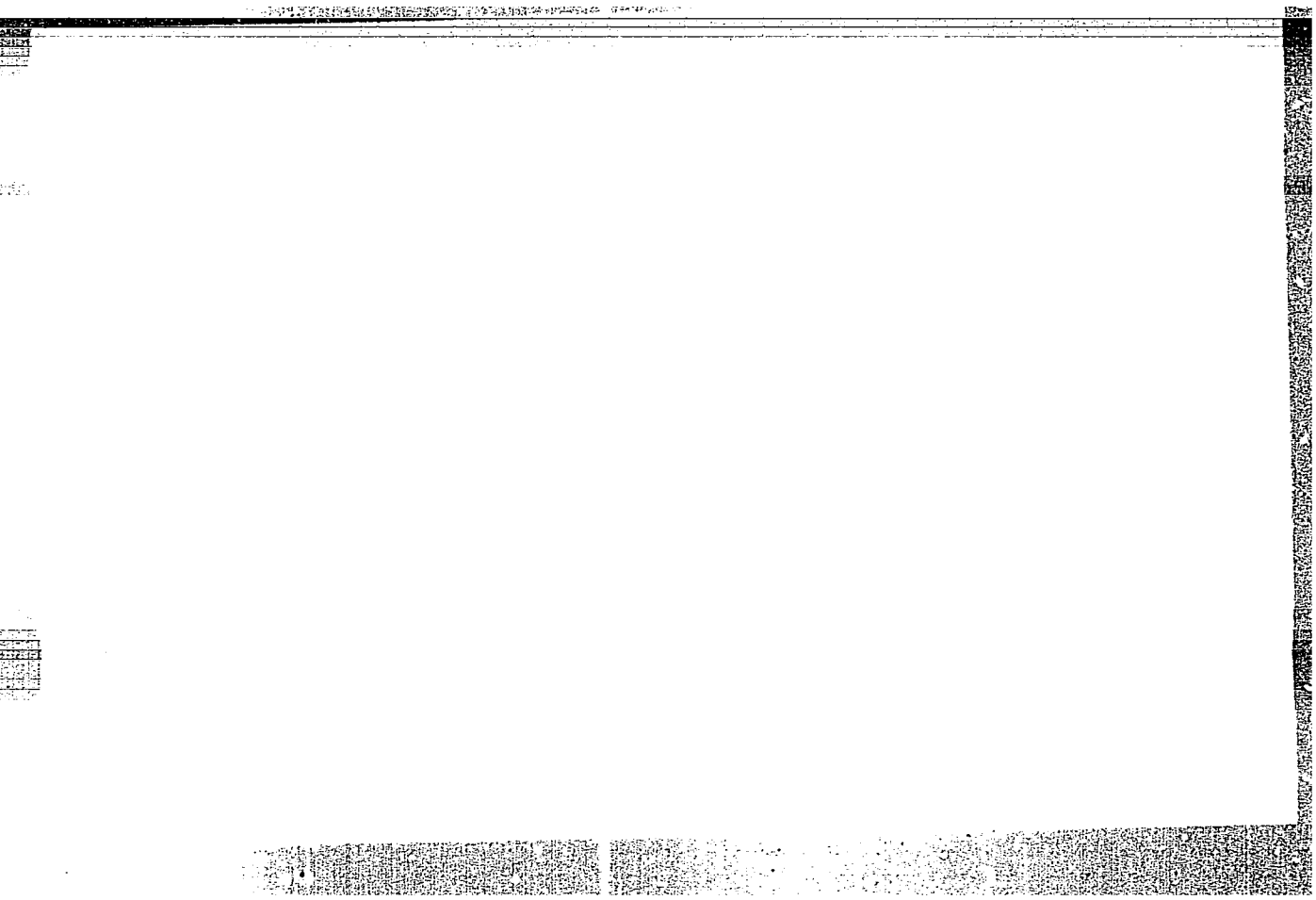

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Kulikowski, R.

I-1

POLAND/Radio Physics - General

Abs Jour : Ref Zhur - Fizika, No 5, 1958, No 11244

Author : Kulikowski R.
Inst : Technical University, Warsaw, Poland
Title : Estimation Methods in the Theory of Nonlinear and Time Variable Filters

Orig Pub : Bull. Acad. polon. sci., 1957, Cl. 4, 5, 243-251, XXII

Abstract : A method is considered, permitting the determination of the range of a solution of a system of nonlinear differential equations describing a certain wide class of nonlinear filters with variable parameters. Using specific examples, the author shows that this method can be used to determine the upper limit of the amplitude of the output signal, effective and mean-squared distortions, the limits (upper and lower) of the signal to noise ratio, and the stability conditions under random disturbances.

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Kulikowski R

POLAND/Radio Physics - General

I-1

Abs Jour : Ref Zhur - Fizika, No 5, 1958, No 11245

Author : Kulikowski R.
Inst : Technical University, Warsaw, Poland
Title : Uniform Realization of Operators by Means of Linear Elements

Orig Pub : Bull. Acad. polon. sci., 1957, Cl. 4, 5, No 4, 253-260, XXIII

Abstract : The author considers problems of the synthesis of certain linear and nonlinear filters, specified by the operation $e_2(t) Ae_1(t)$, where $e_1(t)$ and $e_2(t)$ are the input and output signals respectively, and A is an operator in functional space. By way of a measure of the approximation to the given operator A, the author chooses the Chebyshev metric D: the error $\Delta = \max |Ae_1 - A_n e_1|$, where A_n is the realized operator. In particular, the author considers the realization of the proportionality operator with the aid of a two-port RC high pass and low pass network, and also integrating and differentiating RC networks.

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KULIKOWSKI, R.

POLAND/Radio Physics - Statistical Phenomena in Radio Physics I-2

Abs Jour : Ref Zhur - Fizika, No 10, 1958, No 23465

Author : Kulikowski R.
Inst : Polish Academy of Sciences, Warsaw
Titlo : Signal to Noise Ratio and Distortions of Band Limited Signals

Orig Pub : Bull. Acad. polon. sci., 1957, Cl. 4, 5, No 6, 341-347, XXXII

Abstract : A general analysis is presented of communication systems from the point of view of maximalization of the signal to noise ratio and minimization of the distortion $\delta = \max u-o$ (o and u are respectively the signals at the input and the output) at the output. Certain results are obtained for a definite class of nonlinear systems. By way of examples, the author considers a tuned n-stage amplifier and photoelectric or magnetic reproduction.

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I.

POLAND/Radio Physics - Reception of Radio Waves.

Abs Jour : Ref Zhur - Fizika, No 7, 1959, 16205

Author : Kulikowski, R.
Inst : -
Title : On the Theory of the Nonlinear AM Receiver

Orig Pub : Bull. Acad. polon. sci. Ser. sci. techn., 1958, 6, No 4, 235-240

Abstract : The author considers AM receivers, made up of linear (high frequency and intermediate frequency) and nonlinear (detector) four-terminal networks. The potimum functions are calculated such as to insure the maximum of the signal to pulse noise ratio in the case of linear and quadratic detectors. The transfer functions of receivers that insure a minimum rise time of a pulse signal at the output of the receiver at a specified pulse noise level are determined. The author also considers the ratio of signal to pulse noise for the most unfavorable

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POLAND/ Radio Physics - Reception of Radio Waves. I.

Abs Jour : Ref Zhur - Fizika, No 7, 1959, 16205

case of a signal with a limited frequency band.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

POLAND/Radio Physics - General Problems. I

Abs Jour : Ref Zhur Fizika, No 10, 1959, 23191

Author : Kulikowski, R.

Inst : Academy of Sciences, Technical University, Warsaw, Poland

Title : On the Theory of Nonlinear Oscillators.

Orig Pub : Bull. Acad. polon. sci. Ser. sci. techn., 1958, 6, No 6, 353-358

Abstract : The method of analysis of nonlinear oscillating systems, which is based on the energy-balance relations during one cycle of oscillations, is generalized to include the case when the systems contains elements with nonlinear and time-dependent characteristics. The class of systems to which this method can be applied is indicated. Also considered is the problem of the stability of nonlinear

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

POLAND/Radio Physics - General Problems. I

Abs Jour : Ref Zhur Fizika, No 10, 1959, 23190

for the frequency stability of an oscillator having the foregoing characteristic in the form of a polynomial of the n-th degree. -- Yu. M. Romanovskiy

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI,R.

Synthesis of a class of optimum control systems. Bul Ac Pol tech 7 no.11:663-671 '59. (KEAI 9:6)

1. Communications Theory Department, Institute of Basic Technical Problems, Polish Academy of Sciences. Presented by P.Szulkin.
(Automatic control)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI,R.

On the synthesis of adaptive systems. Bul Ac Pol tech 7 no.12: 697-707 '59. (EEAI 9:6)

1. Communications Theory Department, Institute of Basic Technical Problems, Polish Academy of Sciences. Presented by P.Szulkin.

(Automatic control) (Series) (Frequency)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, R.

Synthesis of optimum control systems with area-bounded control signal. Bul Ac Pol tech 8 no.4:179-186 '60. (EEAI 9:10)

1. Communications Theory Department, Institute of Basic Technical Problems, Polish Academy of Sciences and Department of Ultra-Short Waves Technics, Warsaw Technical University. Presented by P.Szulkin.
(Automatic control) (Control systems)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, R.

Concerning a class of optimum control systems. Bul Ac Pol Tech 8 no.10:595-600 '60.

1. Communication Theory Department, Institute of Basic Technical Problems, Polish Academy of Sciences. Presented by P. Szulkin.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, R.

On the synthesis of optimum sampled-data control systems. Bul Ac Pol Tech 8 no.11/12:673-679 '60.

1. Communication Theory Department, Institute of Basic Technical Problems, Polish Academy of Sciences and Department of Ultra-Short Waves Technics, Warsaw Technical University. Presented by P.Szulkin.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, Roman

On optimal control systems. Archiw automat 6 no.2/3:235-296 '61. (EEAI 10:9)

1. Katedra Techniki Fal Ultrakrotkich Politechniki Warszawskiej i Zaklad Teorii Lacznosci Instytutu Podstawowych Problemow Techniki Polskiej Akademii Nauk.

(Automatic control)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

37653

S/124/62/000/005/001/048
D251/D308

11,8000

AUTHOR: Kulikowski, R.

TITLE: Optimalization of multidimensional control systems by Monte Carlo methods

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 5, 1962, 15, abstract 5A123 (Bull. Acad. polon. sci. Ser. sci. techn. 1961, v. 9, no. 2, 113 - 121)

TEXT: A multidimensional system is considered in which a non-linear regulated system is described by a positive symmetric operator $y(x) = y(x_1, \ldots, x_n) = \alpha_o + \sum_{i=1}^{n} \alpha_i \left(\sum_{k=1}^{n} \beta_{ik} x_k - \gamma_i\right)^2$ where y is the output of the system, x_i are the inputs of the system, α_i, β_{ik} γ_i are real numbers ($\alpha_o > 0$), $x_i = \hat{x}_i + n_i(t)$ ($\hat{x}_i$ is the action of the regulator, $n_i(t)$ are the resistances which have known functions

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of likelihood distribution. There also act on the regulated system and on its output known random resistances $n(t)$ and $n_0(t)$. It is necessary to choose $x_i = \bar{x}_i$, such that $y(\bar{x}_1, \ldots, \bar{x}_n) = \min_{x \in S}[y(x_1, \ldots, x_n)] = \alpha_0$. In the presence of random resistances the $\bar{x}_i$ will be random functions of time. A method of seeking an extremum is proposed by means of random variation of the inputs x_i, based on the Monte Carlo method. The possibility is considered of reducing the statistical error by applying the so-called Importance Sampling and also the possibility of reducing the influence of the resistances. Control systems are constructed with the aid of analog or digital computers. Systems based on random search of this type are the more effective for a greater number of controlled inputs and a higher resistance level. [Abstractor's note: Complete translation].

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S/194/62/000/006/054/232
D295/D308

AUTHOR: Kulikowski, R.

TITLE: Optimizing non-linear control systems comprising non-stationary inertial and non-linear elements

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 6, 1962, abstract 6-2-127 t (Bull. Acad. polon. sci., Ser. sci. techn., 9, no. 8, 1961, 477-486)

TEXT: The problem is considered of minimizing the functional $F(x) = \lambda \int_0^T x^2(t)dt - \int_0^T P_{T_0} A(x)dt$, which depends on the function $x(t)$ and is a performance index of the system. Here $x(t)$ is the function that is applied to the input of the controlled object, $A(x)$ is an operator (in general non-linear) which operates on the input function of the controlled object, and $P_T[y(t)]$ is a linear operator which transforms any given function $y(t)$ into a function $y(t, T_o)$.

Card 1/2

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Optimizing non-linear control ... S/194/62/000/006/054/232
D295/D308

The problem is solved for operators $P_{T_0}[A(x)]$ having the form of determined integral relations. On the basis of general theorems of functional analysis the necessary condition is derived as well as a sufficient condition for the indicated functional to be a minimum. It is suggested to use an iterative process, based on the principle of contracted representations for solving the integral equations obtained. 4 references. [Abstractor's note: Complete translation.]

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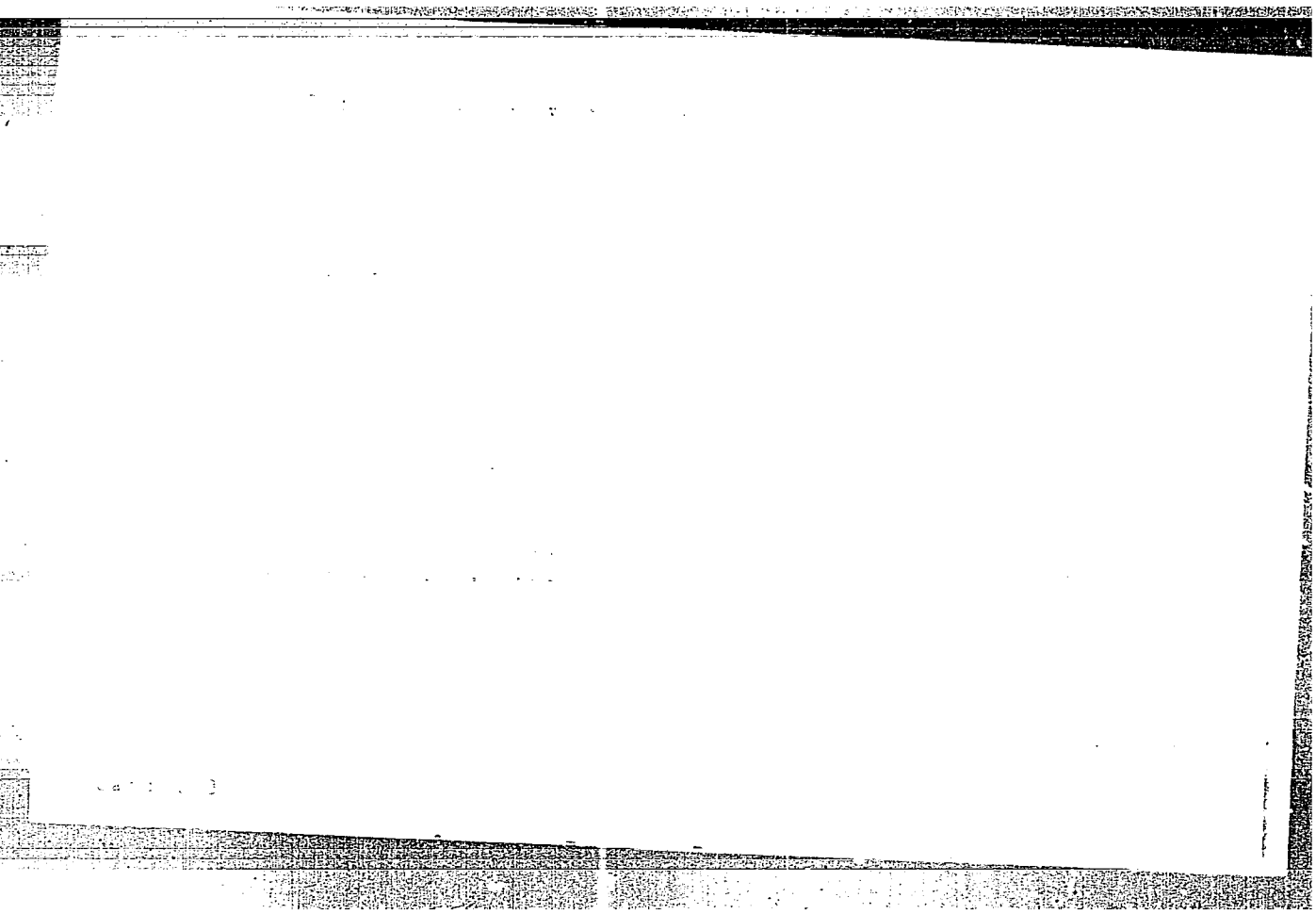

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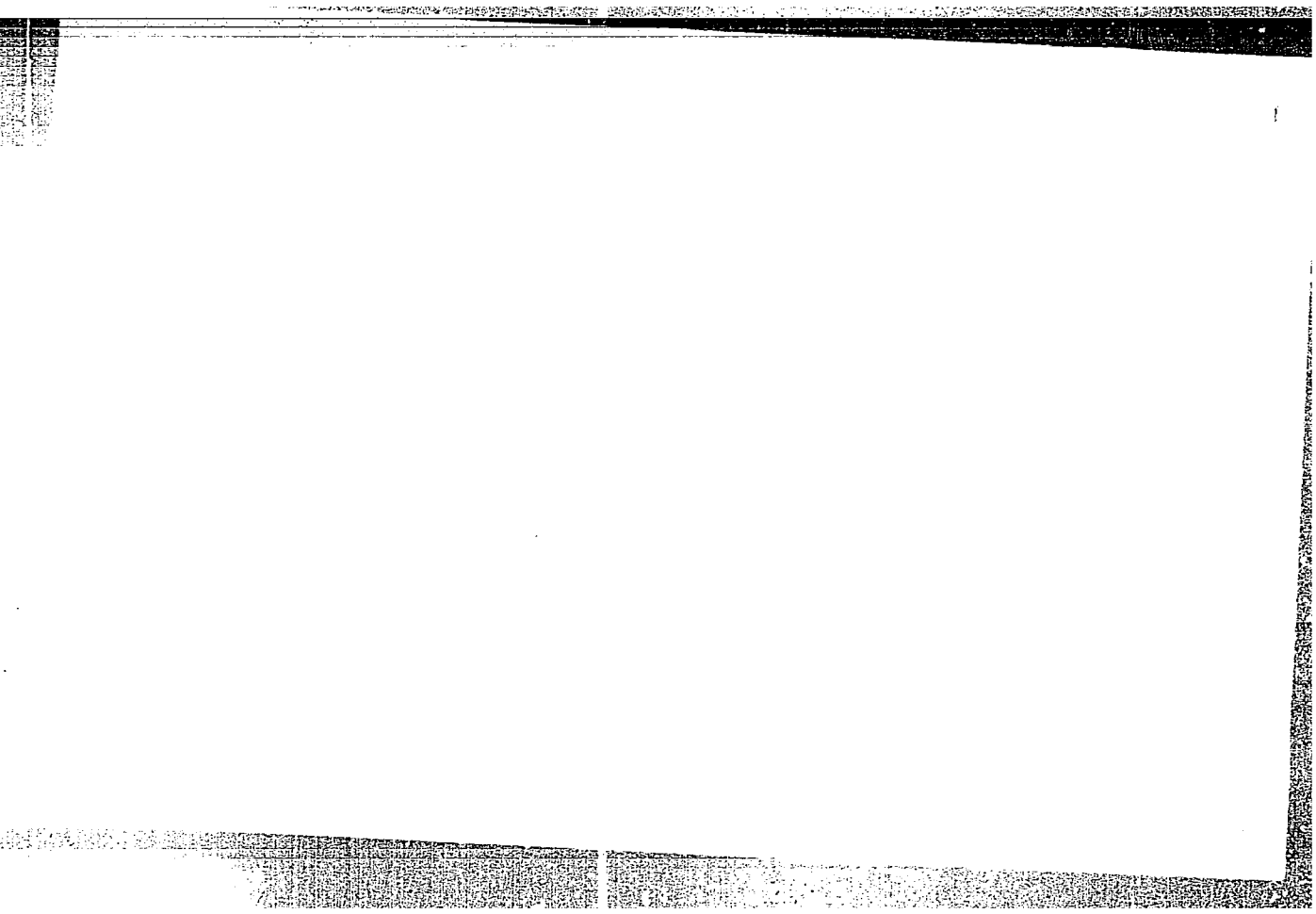

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KULIKOWSKI, Roman

Adaptive optimization of systems with human operators. Archiw automat 8 no.2:135-158 '63

1. Katedra Techniki Fal Ultrakrotkich, Politechnika, Warszawa, i Zaklad Teorii Lacznosci, Instytut Podstawowych Problemow Techniki, Polska Akademia Nauk, Warszawa.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

Author: Kulikowski, Roman (Kulikowski, R)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

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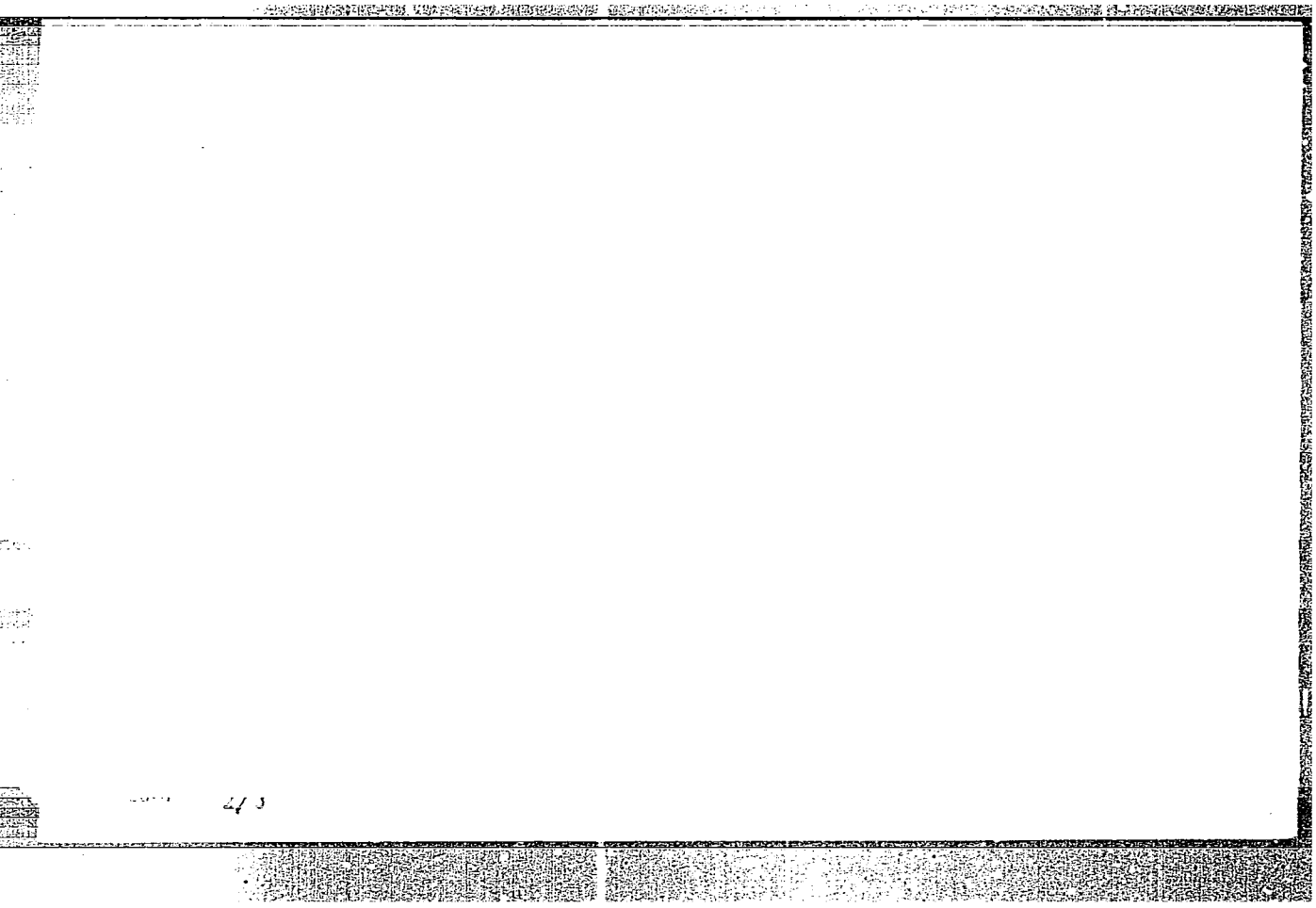

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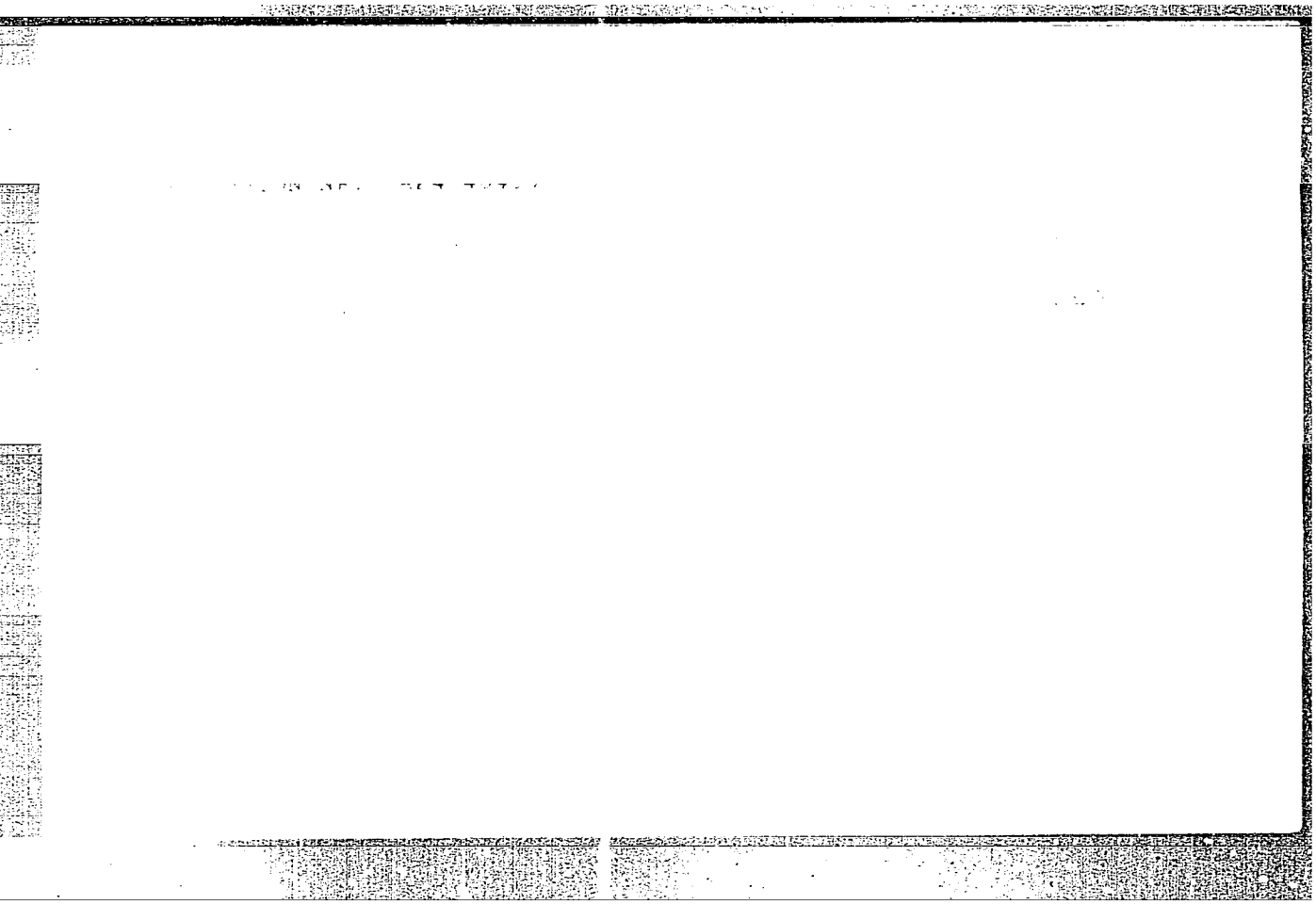

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

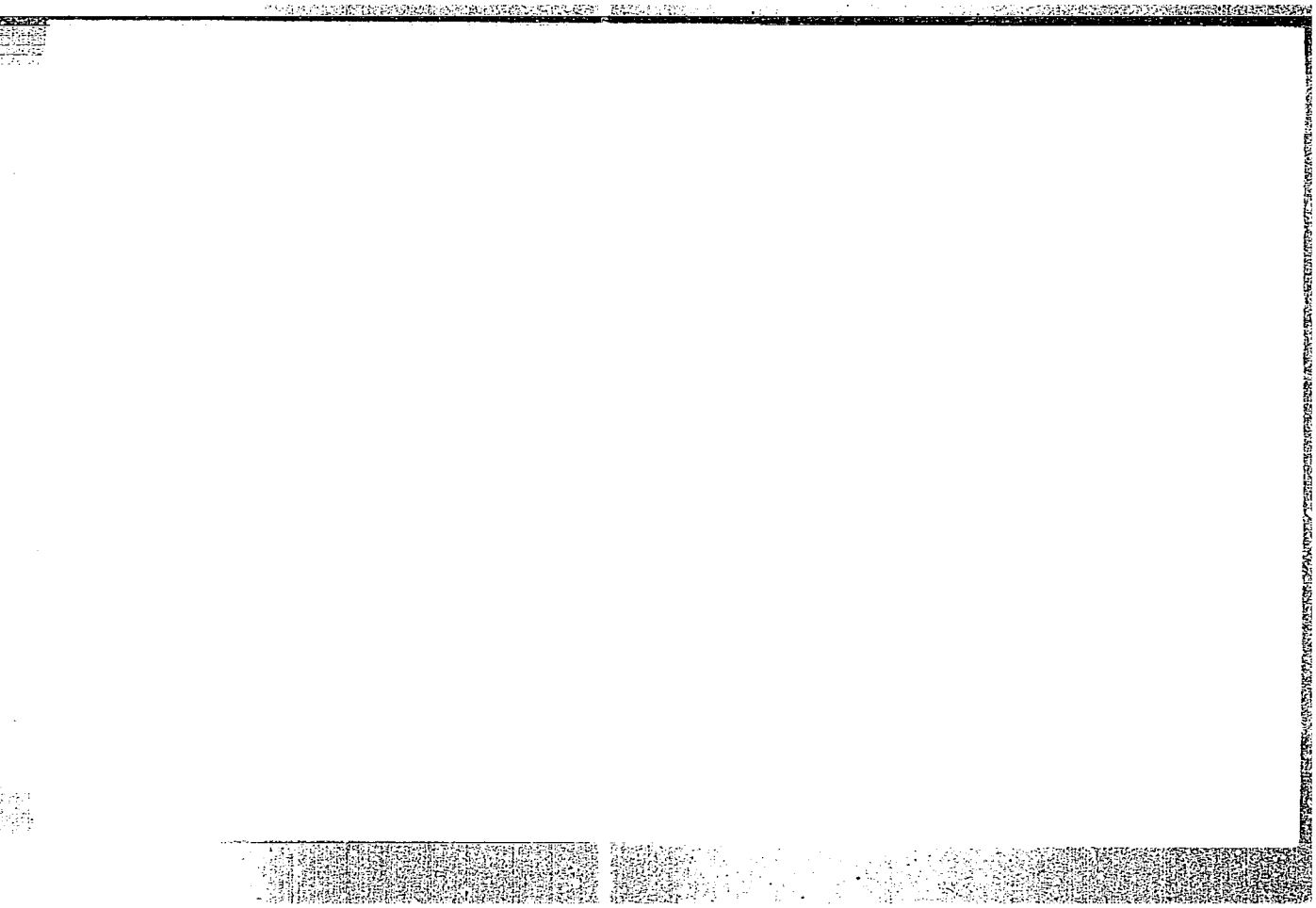
KULIKOWSKI, Roman

Adaptive optimizing of large systems with hierarchic control structure. Archiw automat 9 no.4:329-356 '64.

1. Department of Automation and Telemechanics of the Technical University, Warsaw, and Institute of Automation of the Polish Academy of Sciences, Warsaw.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0



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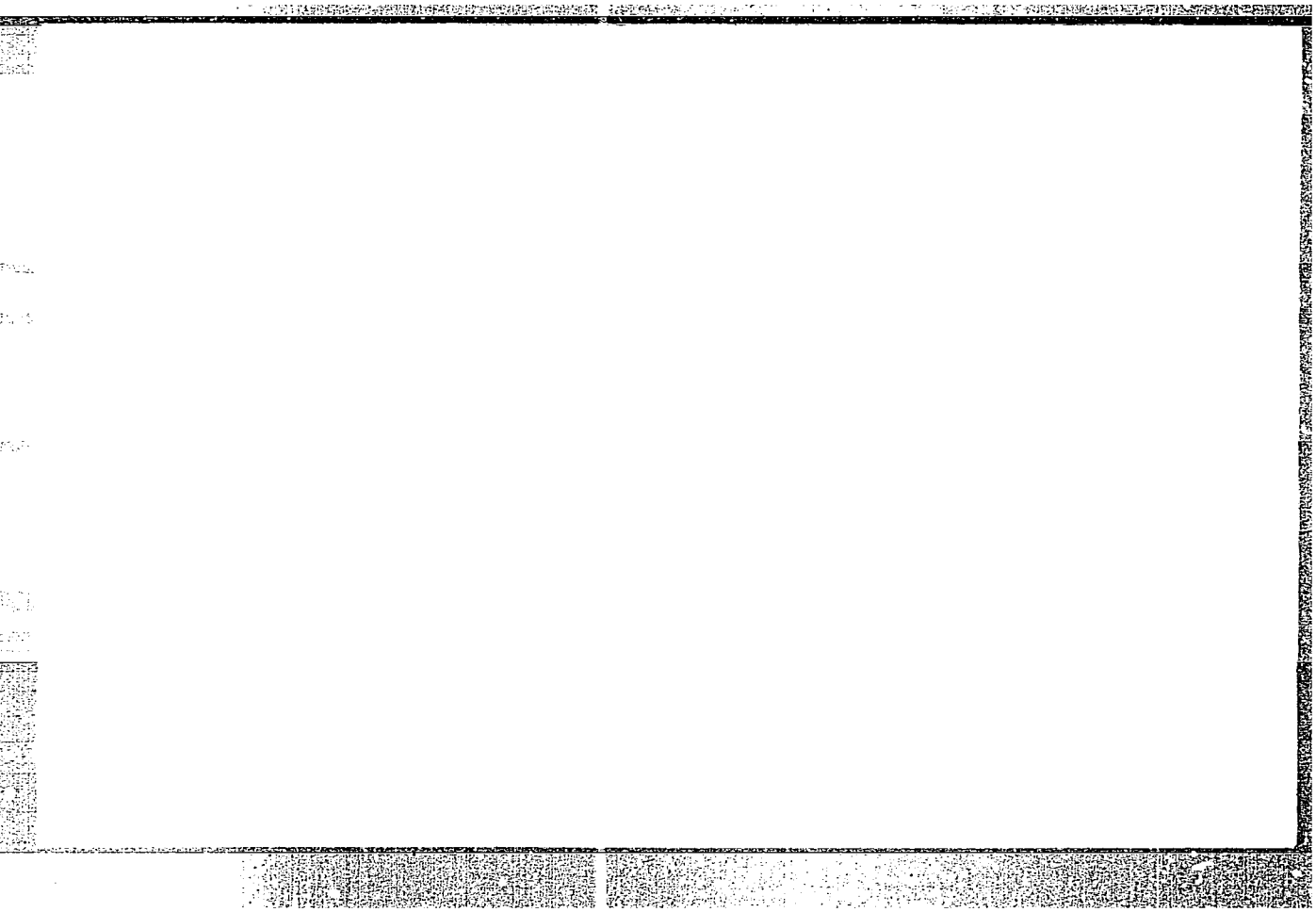

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L 26684-66 EWP(1) IJP(c)
ACC NR: AT6014784 SOURCE CODE: GE/2503/65/000/002/0424/0428

AUTHOR: Kulikowski, R.

49
B+1

ORG: Institute of Automation, Polish Academy of Sciences, Warsaw (Polska Akademia Nauk, Instytut Automatyki)

TITLE: Nonlinear dynamic identification

SOURCE: Akademie der Wissenschaften, Berlin. Klasse fur Mathematik, Physik und Technik. Abhandlungen, no. 2, 1965. Berlin, 1966. III. Konferenz uber Nicht-lineare Schwingungen, Berlin, 1964. Teil II: Technische Schwingungsprobleme und Fragen der Regelung und Steuerung (Third Conference on Non-linear Vibrations. pt. 2: Technical vibration problems and questions of regulation and control), 424-428

TOPIC TAGS: nonlinear operator, linear operator, linear system, dynamic system, signal identification, Taylor series, signal correlation

16

ABSTRACT: The experimental identification of the nonlinear operator A, which describes the dynamics of the nonlinear system, is discussed. The identification process is based on the observation of an output signal corresponding to an input signal of the system. Problems of this type are of interest in the case of automatic-control of systems unknown to an operator, such as those of aircraft or technological processes. It is assumed that the nonlinear operator A in the χ space of input signals can be differentiated at least n times and that it can be expanded into a generalized Taylor series in which each term A_i is a nonlinear operator. It is further shown

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that the unknown nuclei of the integral operators A_i can be experimentally determined by means of small changes in the input step signal and by observation of corresponding changes at the system's output. Stationary noise can be used as an input variation, while the unknown functions describing the nuclei can be identified by means of a correlation technique. The method proposed can be regarded as an extension of the known correlation technique, which is often used in automatic control for the identification of linear systems. Orig. art. has: 9 formulas and 1 figure. [Translation of author's abstract.] [AM]

SUB CODE: 12/ SUBM DATE: none/ OTH REF: 002/ SOV REF: 001

Card 2/2 BLG

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

POLAND

KULIKOWSKI, Roman

Dept. of Optimization Theory, Automation Institute, Polish Academy of Sciences (Instytut Automatyki PAN, Zaklad Teorii Optymizacji)

Warsaw, Archiwum automatyki i telemechaniki, No 2, Apr-Jun 1966, pp 131-145

"Optimum control of dynamic interacting systems."

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

L 00848-67 EWP(c)/T/EWP(v)/EWP(k)/EWP(h)/EWP(l) IJP(c)
ACC NR: AP6029481 SOURCE CODE: PO/0031/66/011/002/0131/0146

32
31
0

AUTHOR: Kulikowski, Roman--Kulikovski, Roman

ORG: Department of Optimization Theory, Institute of Automation, Polish Academy of Sciences (Instytut Automatyki PAN, Zaklad Teorii Optymizacji)

TITLE: Optimum control of dynamic interacting systems

14

SOURCE: Archiwum automatyki i telemechaniki, v. 11, no. 2, 1966, 131-146

TOPIC TAGS: quality system control, optimal automatic control, optimal control

ABSTRACT: The author investigates the problem of optimum control of multi-dimensional plants described by linear operators and a quadratic performance functional in Hilbert space. The condition of optimality, defined by the "principle of reflected images", is formulated, and a solution of the problem is obtained by using analog and digital devices. It is shown that by using first-level controllers, originally designed for single input-output operations, and second-level controllers, which effect an exchange of information, it is possible to solve large-

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ACC NR: AP6029481

scale optimization problems. It is also shown that analogous methods may be used to solve nonlinear processes and more complex quality control functionals.
[Based on author' s abstract] [SP]

SUB CODE: 12/ SUBM DATE: 11Oct65/ ORIG REF: 001/ SOV REF: 003/
OTH REF: 006/

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APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

POLAND

KULIKOWSKI, Roman

Institute of Automatic Control, Polish Academy of Sciences

Warsaw, Archiwum automatyki i telemechaniki, No 3, July/Sept 1966, pp 227-55

"Optimization of aggregated dynamic systems."

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

L [illegible] EWP(e)/EWP(v)/EWP(k)/EWP(h)/EWP(l)

ACC NR: AP6031530 SOURCE CODE: PO/0031/66/011/003/0227/0255

AUTHOR: Kulikowski, R.—Kulikovski, R.

ORG: Institute of Automatic Control of the Polish Academy of Sciences

TITLE: Optimization of aggregated dynamic systems

SOURCE: Archiwum automatyki i telemechaniki, v. 11, no. 3, 1966, 227-255

TOPIC TAGS: ~~large scale process,~~ optimal control, large scale system optimization, DYNAMIC SYSTEM

ABSTRACT: This article deals with the problem of optimizing aggregated dynamic systems composed of independent dynamic subprocesses controlled by actions resulting from the common control resources and contributing to the common goal. It can be considered as an extension of the results presented in his paper at the Third IFAC Congress and in the article published in "Advances in control theory," Academic Press Inc., New York, 1966. It is shown that by applying the concepts of the optimum performance characteristic and aggregation, the dynamic optimization problem can be reduced to a problem of nonlinear programming. For particular types of optimal performance characteristics of the controlled processes, the solution of the optimization problem can be reduced to the solution of linear equations. A simple higher-order controller regulating the distribution of control resources for performing single operations which are controlled by lower-order controllers can be constructed. The explicit form of the optimal performance characteristics of control for processes described by functionals defined in L^p space or for

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ACC NR: AP6031530

quadratic functionals in Hilbert space are determined. After this, the problem of optimizing the aggregated systems, including a concrete example of the PERT system, is analyzed. Orig. art. has: 10 figures and 64 formulas. [LK]

SUB CODE: 12/ SUBM DATE: 20Dec65/ ORIG REF: 003/ OTH REF: 013/
SOV REF: 001/

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIKOWSKI, T.

On a programming of simple arithmetic expressions.
Bul Ac Pol mat 12 no. 1: 51-52 '64.

1. Institute of Mathematics, Polish Academy of Sciences, Warsaw. Presented by A. Mostowski.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIMANIN, M. M.

Cand Tech Sci - (diss) "Study of the process of formation of precipitates in the filtration of fibrous mass of wood sulfate cellulose." Leningrad, 1961. 12 pp; (Ministry of Higher and Secondary Specialist Education RSFSR, Leningrad Order of Lenin Forestry Engineering Academy imeni S. M. Kirov); 150 copies; free; (KL, 7-61 sup, 239)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIMANN, Lajos, okleveles gepeszmernok

Current questions relating to the maintenance of railroad traction vehicles. Jarmu mezo gep 8 no.4:130-135 Ap '61.

1. MAV foeloado.

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"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

ZAKHVATKIN, V.K.; KULIMIN, S.G.; GEORGIYEV, K.T.; VECHKINOV, D.K.

Increasing the output of flotation equipment at Bulgarian ore dressing plants. TSvet. met. 38 no.9:18-25 S '65. (MIRA 18:12)

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

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L 13[illegible]-66 EWT(d)/EWT(m)/EWP(v)/EWP(j)/T/EWP(k)/EWP(h)/EWP(l)/EWP(m) WW/RM

ACC NR: AP6001002 SOURCE CODE: UR/0286/65/000/022/0070/0070

AUTHORS: Bogdanov, A. M.; Kulin, F. I.; Melent'yev, P. V.; Stalevich, A. M.; Tiranov, V. G. 38 B

ORG: none

TITLE: Device for mechanical testing of materials. Class 42, No. 176448 15

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 22, 1965, 70 14

TOPIC TAGS: tensile test, polymer rheology

ABSTRACT: This Author Certificate presents a device for mechanical testing of materials, e.g., polymers, for extensibility. The device contains a system of two clamps for fastening the material sample. One clamp is fixed and is mechanically coupled to the force-measuring instrument. The other clamp is movable in the vertical direction, applies the load to the stretching sample, and is connected to a device for measuring the sample deformation. To automate the process of deformation measurement, the movable clamp is provided with a contact device and a support for free placing of the load on the stretching sample. The contact device in the form of a nut on the screw axle of an electric motor closes the motor circuit when the nut touches the load descending as a result of the sample stretching. The force-measuring element of the device, in the form of an elastic beam, bends under the action of the

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L 13625-66

ACC NR: AP6001002

force applied to the upper clamp of the device. A switch on the free end of the beam closes with a contact fastened to a nut placed on the screw axle of an electric motor. When the circuit is closed, motion of the nut mounted on the motor axle continues until the contact is broken.

SUB CODE: 11/ SUBM DATE: 06Apr64

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Card 2/2

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, GY.

"Photography of the 'Meteoric Phenomenon' Successful." P. 758 (TERMESZET ES TARSADALOM. Vol. 113, No. 12, Dec. 1954; Budapest, Hungary.)

So: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4, April 1955, Uncl..

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, GY.

The Urania workshop in the service of adult instruction in astronomy.
p. 439

Vol. 114, no. 7, July 1955
TERMESZET ES TARSADALOM
Budapest

Source: Monthly list of East European Accession, (EEAL), LC,
Vol. 5, no. 3, March 1956

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, Gy.

Szilard Zerinvary's Nap, fold, emberiseg (Sun, Earth, Mankind); a book review. p. 447

Vol. 114, no. 7, July 1955
TERMESZET ES TARSADALOM
Budapest

Source: Monthly list of East European Accessions, (EEAL), LC,
Vol. 5, no. 3, March 1956

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, GY.

The Arend-Roland comet. p. 27.

(Fizikai Szemle. Vol. 7, no. 1, Feb. 1957. Budapest, Hungary)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, no. 10, October 1957. Uncl.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, Gyorgy

Celestial mechanics of artificial moons and space flight.
Fiz szemle 8 no.2:35-40 F'58

1. Urania Csillagvizsgalo.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, Gyorgy, dr.

Astronomical calendar for January 1961. Term tud kozl 4 no. 12:576 D '60.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, Gyorgy, dr.

Do changes in our distance from the sun cause it that in the morning and afternoon we can look toward the sun, but cannot during the noon hours? Elet tud 14 no.43:1351 23 O '60.

1. Urania Bemutato Csillagvizsgalo igazgatoja, es "Elet es Tudomany" szerkeszto bizottsagi tagja.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, Gyorgy

Why can the circumference of the new moon be seen so sharply while the other parts of the circle are completely dark? Elet tud 15 no.16:482 17 Ap '60.

1. Urania Csillagvizsgalo igazgatoja, es "Elet es Tudomany" szerkeszto bizottsagi tagja.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, Gyorgy, dr.

Polarizing varioscope. Elet tud 15 no.27:851 3 Jl '60.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0"

"APPROVED FOR RELEASE: 08/23/2000 CIA-RDP86-00513R000927430006-0

KULIN, Gyorgy, dr.

On the Capella star red, bluish, and yellowish lights alternate instead of the customary vibration. What is the cause of it? Elet tud 15 no.43:1350 23 O '60.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja, es Urania Bemutato Csillagvizsgalo igazgatoja.

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KULIN, Gyorgy, dr.

What is the cause for the 11-year-old sunspot period? Is it possible that the motion of Jupiter has an effect on it? Elet tud 15 no.50:1570 11 D '60.

1. Urania Bemutato Csillagvizsgalo igazgatoja, es "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

Is it true that during the sunspot maximum period, the chemically unknown, so-called "dead rays" were detected? Elet tud 15 no.51:1610 18 D '60.

1. Urania Bemutato Csillagvizsgalo igazgatoja, es "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

The age of elements. Elet tud 16 no.11:328-330 12 Mr '61.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

We observed the solar eclipse in Bulgaria. Elet tud 16 no.13:392-395 26 Mr '61.

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KULIN, Gyorgy, dr.

The cause of the March 4 celestial phenomenon. Elet tud 16 no.15:450 9 Ap '61.

1. Ukrania Bemutato Csillagvizsgalo igazgatoja,es "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

The earth does not rotate evenly. Elet tud 16 no.47:1475-1478 19 N '61.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

Is there any life on other celestial bodies? Elovilag 7 no.1: 17-20 Ja-F '62.

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KULIN, Gyorgy, dr.

Is the conjunction of satellites ill-omened? Elet tud 17 no.4:108-110 Ja '62.

1. Tudomanyos Ismeretterjeszto Tarsulat Urania Bemutato Csillagvizsgalojanak igazgatoja, es "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

"Galileo Galilei" by Ludovico Geymonat. Reviewed by Dr. Gyorgy Kulin. Elet tud 17 no. 14:442. Ap '62

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr. (Budapest)

Where does the space beyond the atmosphere of the earth begin? Elet tud 17 no. 16: 482 22 Ap '62.

1. Urania Bemutato Csillagvizsgalo igazgatoja; "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

Men in cosmos. Elet tud 17 no.21:647-651 My '62.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy

Was the Tunguska catastrophe caused by a nuclear blast? Elet tud 17 no.40:1251-1254 7 O '62.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

"The development of Darwinism" by Istvan Benedek. Reviewed by Dr.Gyorgy Kulin. Elet tud 17 no.40:1272 7 O '62.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

The secret of tektites. Elet tud 17 no.43:1367-1369 28 O '62.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy, dr.

First national meeting of Hungarian amateur astronomers.
Konzerv paprika no.5:527-528 S-O'63

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ESD-3/APGC/SSD Pd-4/Pe-4/Pg-4/Po-4/Pq-4 TF

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ACCESSION NR: AP3005715

84
83

AUTHOR: Kulin, Gyorgy

TITLE: Natural earth satellites

SOURCE: Fizikai szemle, v. 13, no. 6, 1963, 178-181

TOPIC TAGS: Natural earth satellite, moon, moon-earth system, satellite orbit, Lagrange-type libration point, three-body problem, astronomy, Lagrange, libration

ABSTRACT: The three-body problem, assuming that the mass of one of the bodies is negligible compared to that of the other two, was applied to the investigation of potential orbits of natural earth satellites other than the moon. Five Lagrange-type libration points were discussed. These points maintain their relative positions to the Earth and the Moon, respectively, during their orbits. Within 326,000 kilometers from the Earth's center, the effect of the earth exceeds that of the moon. In this region it is possible for a satellite to orbit at relatively undisturbed elliptical orbits. The moon has a similar zone in which it is possible for moon satellites to orbit. Any satellites over

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450,000 kilometers from earth could orbit around the joint center of gravity of the earth-moon system. Several theoretical orbits for satellites in the earth-moon system were discussed on the basis of E. u. B. Stromgren's paper ("Astronomische Miniaturen", 1927). Orig. art. has: 4 figures.

ASSOCIATION: Urania Csillagvizsgalo (Urania Astronomical Observatory)

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KULIN, Gyorgy

Mushroom superstitions. Elet tud 18 no.4:108 27 Ja '63.

1. "Elet es Tudomany" szerkeszto bizottsagi tagja.

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KULIN, Gyorgy

Some aspects of Gauss' absolute measuring system from the point of view of celestial mechanics. Fiz szemle 14 no.6:186-187 Je '64.

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KULIN, Gyorgy, dr.

Phenomena of the universe. Elet tud 19 no.14:641-644 3 Ap '64.

1. Editorial board member, "Elet es Tudomany."

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